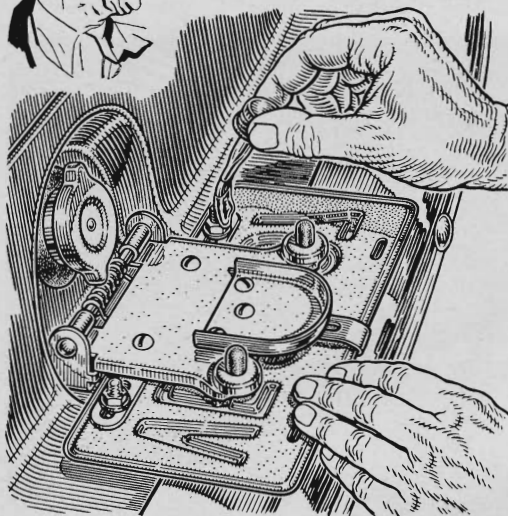
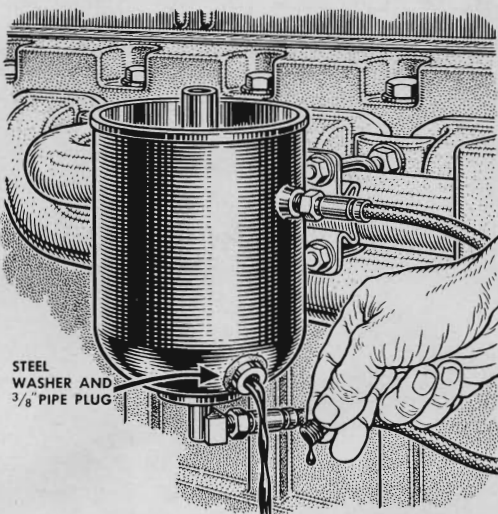




Hints from the Model Garage



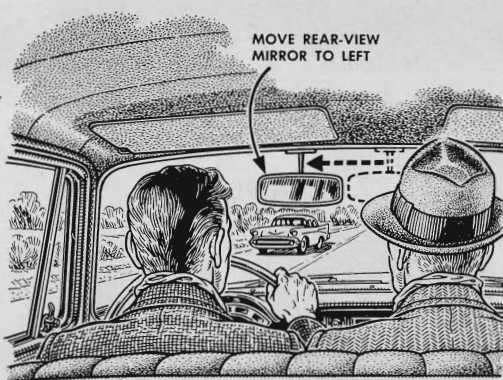
Putting on new license plates? Coat the nuts and the protruding ends of the fastening bolts with gasket shellac. This will keep them from loosening under vibration, and prevent the nuts from rusting and seizing on the bolt threads.



Install a drain plug at the bottom of a permanent oil-filter housing, and you won't need a suction gun to empty the case when changing filters. Braze a thick steel washer to the outside of the case, drill it, and thread for a pipe plug.

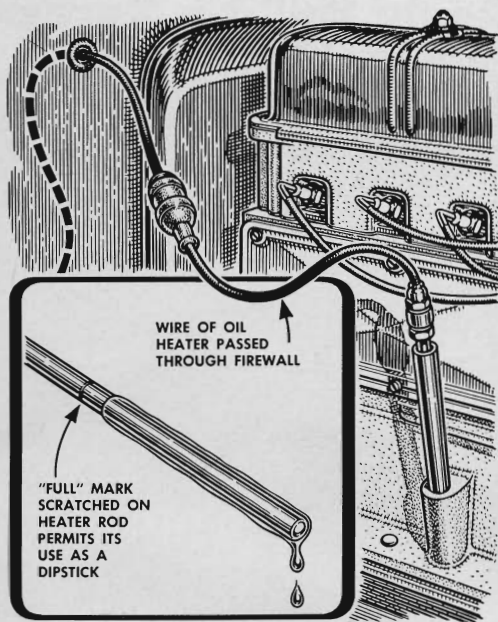


A loose plastic knob on a window crank can be tightened and restored to service simply by filling the worn centerhole with wood putty and pressing it back on the metal stem. Let the wood putty harden a few days before using the crank.

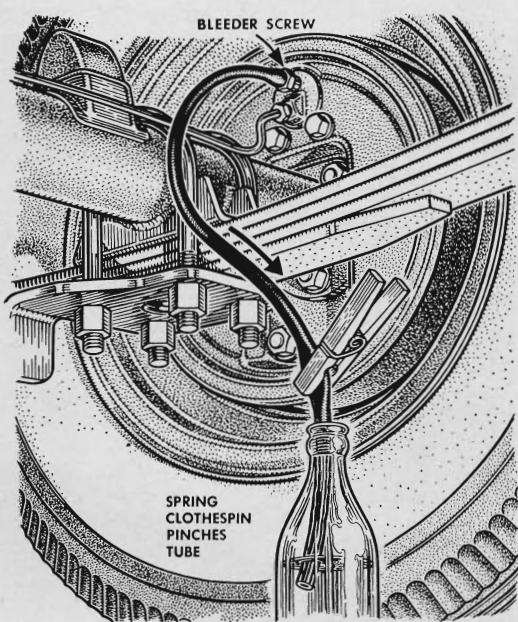


DRIVER HAS REAR VISION
WITH THREE IN FRONT SEAT

Three in front your usual driving arrangement? You'll find it worth while to move the rear-view mirror to the left so the middle passenger doesn't block your view of the road behind. A second mirror to the left of the original is even better.



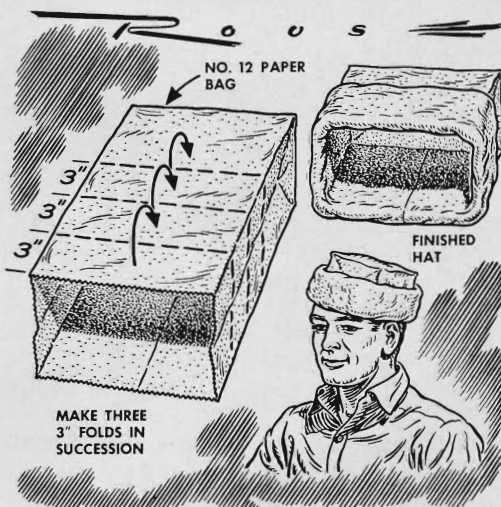
Scratch oil-level marks on your dipstick heater and use it in place of the regular dipstick through the winter. Run the wire into the car where it can easily be passed out a window and plugged into an outlet whenever the car stands idle.



When bleeding brakes with no one to help, a spring clothespin on the bleeder hose serves as a one-way valve to prevent the hose from drawing in air bubbles when the brake pedal is released. Check the master cylinder after bleeding each wheel.



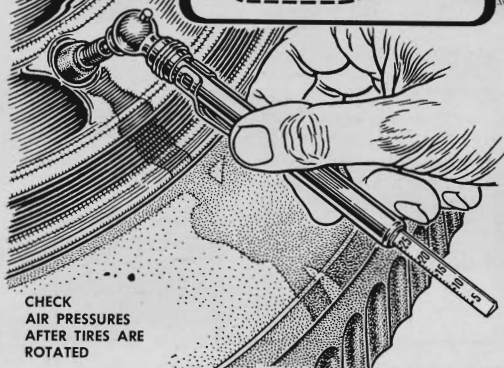
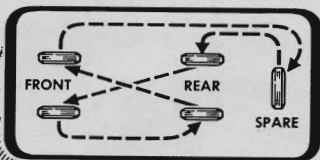
Aim a flashlight where you need it by propping it between the open jaws of pliers stuck in the ground. If the ground is paved or too hard-packed, secure the jaws of the pliers to the light with tape so the handles serve as legs.



A paper hat, folded from a No. 12 paper bag, provides double protection when you work under a car. It keeps grease and dirt out of your hair, and the folded sides cushion bumps and soften contact with the ground when you rest your head.

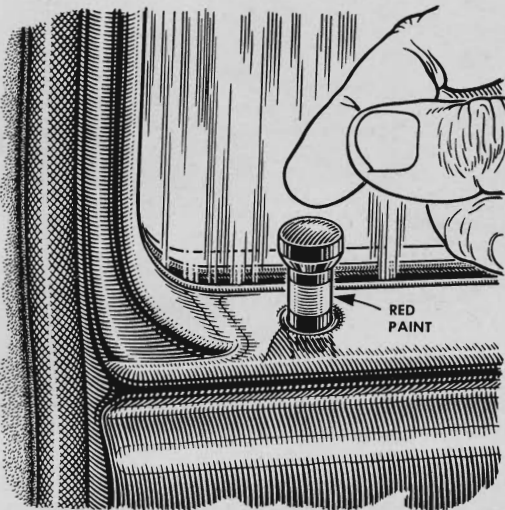


Hints from the Model Garage



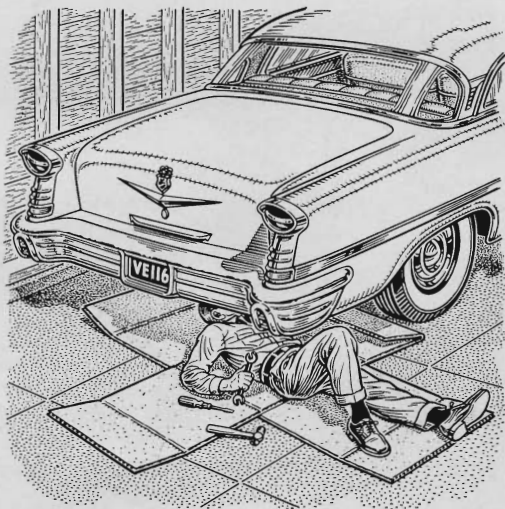
CHECK
AIR PRESSURES
AFTER TIRES ARE
ROTATED

After switching tires, remember to check pressure in the new position. Front tires should carry a few more pounds than rear, and rotating puts the softer rear tires up front (see rotation chart above) where they may prove to be underinflated.

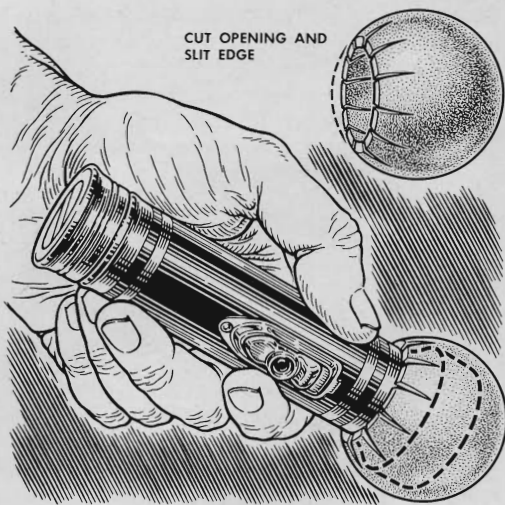


RED
PAINT

Checking door-lock buttons to see that they're down can be done with a glance if you put a band of red paint or colored tape on them. When the buttons are pressed down, the bands disappear. If you can see a band, the door is unlocked.



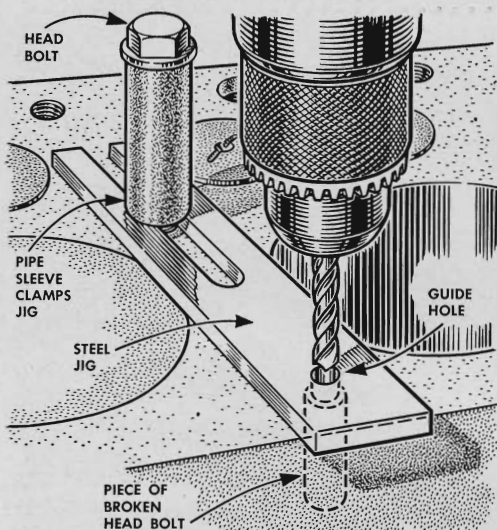
A good makeshift creeper for work beneath your car can be had from a large carton opened flat. It can be shifted about easier than papers or a cloth and the thick board gives your back protection from damp or greasy ground or concrete.



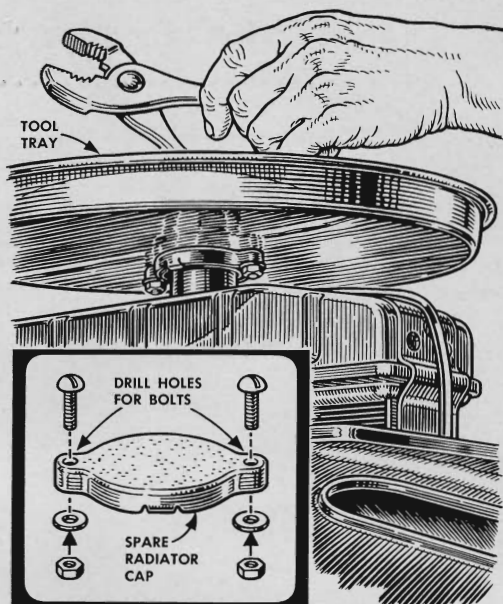
CUT OPENING AND
SLIT EDGE

Cap the lens of a flashlight with a rubber ball to protect it while being carried in the trunk, glove compartment or tool box. Cut an opening in the ball, then slit the edge of the opening so it can easily be forced over the lens of the flashlight.

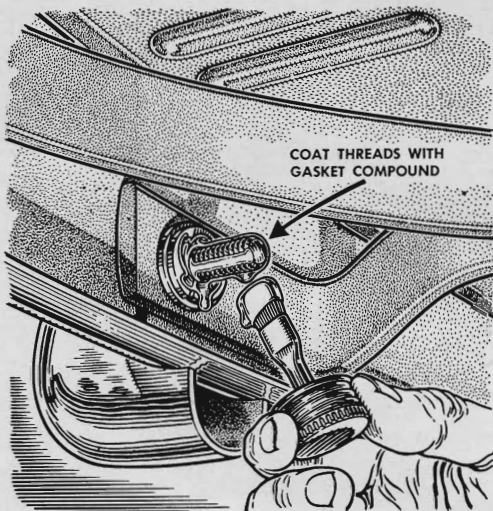
More Hints from the Model Garage



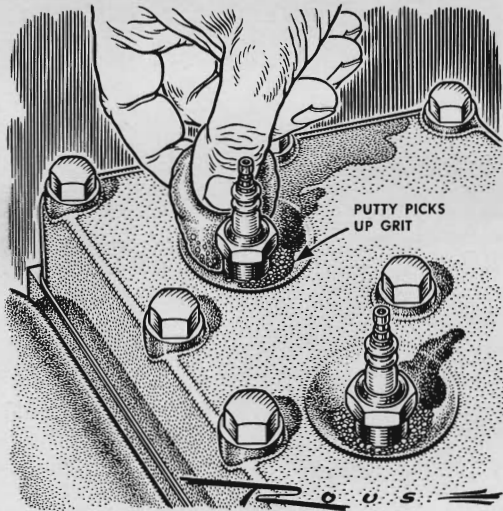
To drill out a broken bolt without damaging the threaded hole, clamp a simple jig under an adjacent bolt to center the drill. To make the jig, cut a slot in one end of a steel strip and drill a guide hole near the other end for the drill bit.



A tip-proof tool tray can be made by bolting a large pie tin or serving tray to the top of a spare radiator cap. Mounted on the radiator's filler neck in place of the regular cap, the tray is handy as you work in the engine compartment.



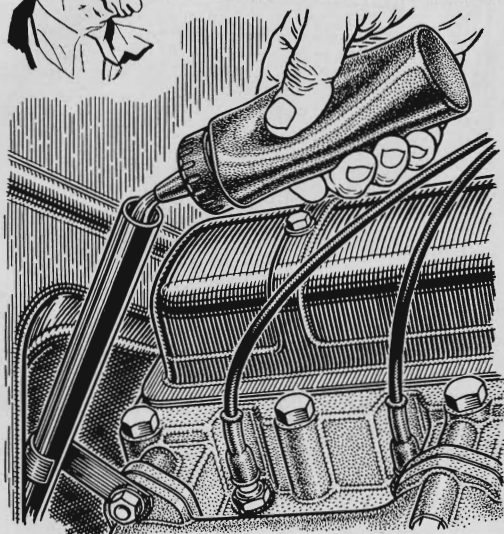
A coating of gasket compound over the protruding end of a bolt exposed to the weather will keep it rust-free and easy to remove. Protect license-plate bolts this way, and coat bumper-bracket bolts, fender and body bolts when new.



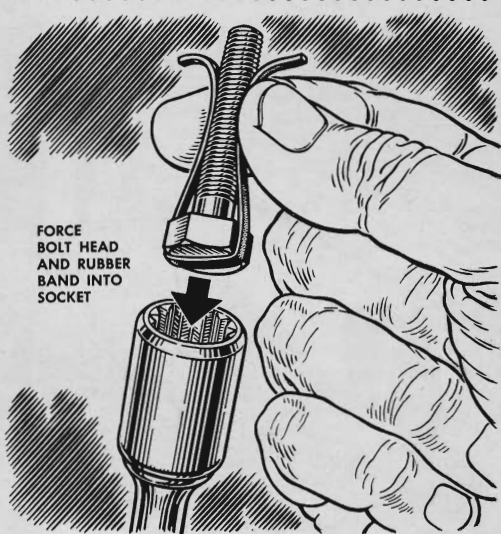
Pick up dirt and grit from spark-plug wells, so plugs can be removed without contaminating the cylinders, with a ball of putty or wallpaper cleaner. Press it in firmly, close to the plug. When you lift it out, the grit will adhere to it.



Hints from the Model Garage



Plastic squeeze bottles make short work of adding lubricant or fluid at hard-to-reach places on a car. Slice a little off each spout to enlarge the hole, and fill bottles with the proper oil for transmission, brake cylinder and differential.



FORCE
BOLT HEAD
AND RUBBER
BAND INTO
SOCKET

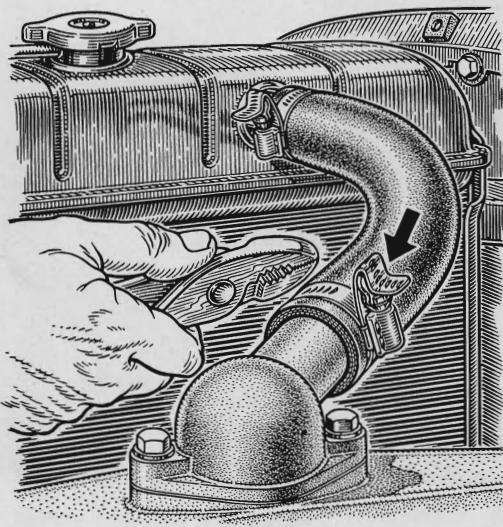
To start a bolt in tight quarters try holding it in an extension socket with a piece of rubber band. Stretch the rubber over the head of the bolt and force it in the socket. When the bolt is seated, the socket can be easily pulled away.



RUBBER BAND

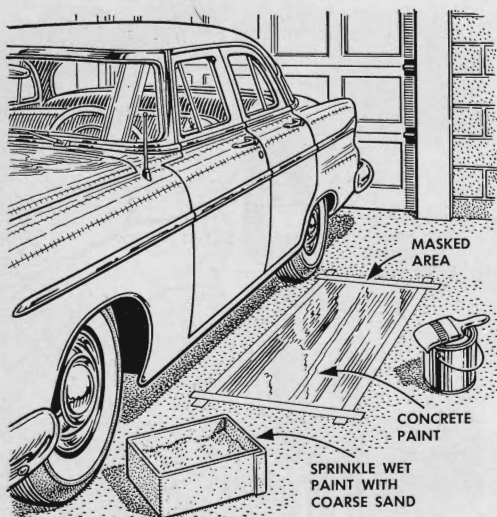


A pair of sleeves from an old coat or shirt will keep your clothes clean when you make roadside repairs. Cut them to fit above your elbow and roll them up for storage. Two rubber bands around the roll will also hold up the sleeves when worn.

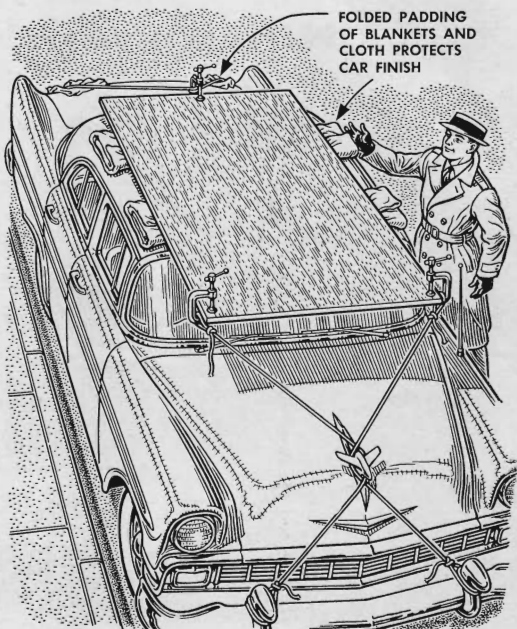


Tighten a hose clamp with this neat trick, copied from the Air Force system of securing bolt heads with wire: Bend the end of a gear-band hose clamp over the thumbscrew after it's been tightened. Now vibration can't loosen the clamp.

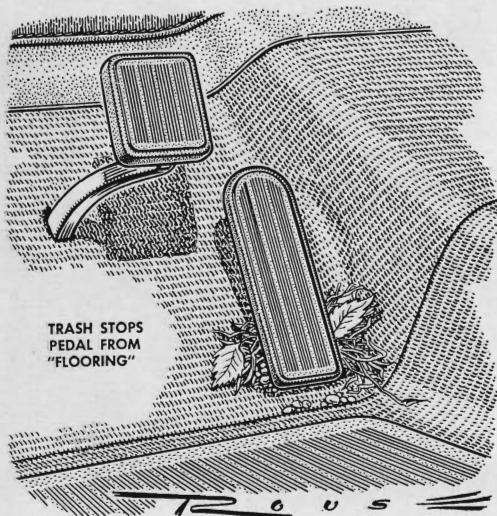
More Hints from the Model Garage



A non-skid floor area in your garage or carport may save you from a fall when getting out of your car in wet weather. Mask off a rectangle beside the car where the doors open, paint it with concrete paint and sprinkle it with coarse sand.



Hauling large panels of plywood or hardboard home from the lumberyard is easy if you use C clamps. Fastened to the ends of the panels, they hold them together and provide eyes for tying them down. Blankets protect the car's roof.



If your car won't downshift when you floor the gas pedal to actuate the kick-down switch, scrape behind the pedal with a screwdriver. Dirt behind its hinged base often limits pedal travel, sometimes so much that the car feels sluggish.

Do You Have an Auto Hint? Send It in and Win a Prize

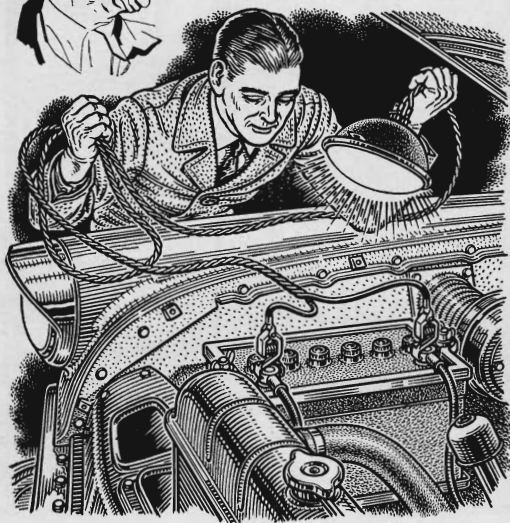
HAVE you discovered or developed a money-saving short cut for making your own auto repairs? Have you found an easier way to do a difficult job? Got a tip that will make driving safer or easier? Or do you know someone who has?

POPULAR SCIENCE will pay a cash prize of \$15 for every auto-repair hint accepted for publication in Hints from the Model Garage.

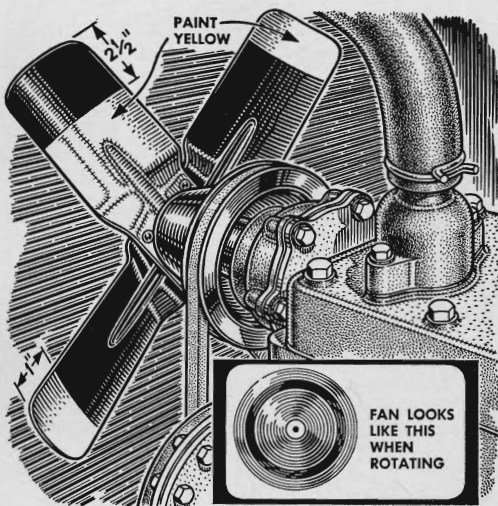
Describe your hint as completely as you can in words. Add a pencil drawing, or shoot a photo, if you feel that this will make your idea more easily understood. Address your entry to Model Garage Editor, POPULAR SCIENCE, 353 Fourth Ave., New York 10, N.Y.



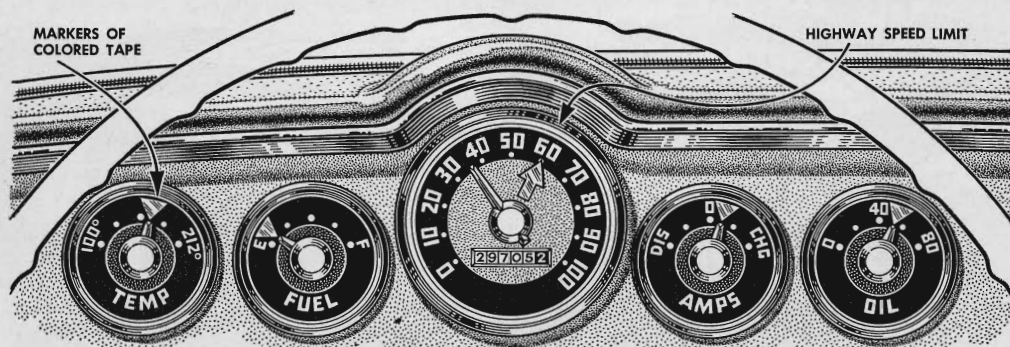
Hints from the Model Garage



Make a trouble lamp that *really* illuminates the work area. Use an old two-beam headlight in which one filament has burned out. Solder wires about 12 feet long to the good terminals of the bulb and attach battery clips to the wire ends.



A rotating fan will show up clearly as a yellow disk with a black ring when *part* of each blade is painted yellow for safety, as shown above. To avoid splashing, use a fast-drying paint and let it dry thoroughly before starting the engine.



TEMPERATURE GAUGE. Place marker on glass in line with needle after stabilizing engine's temperature by driving the car for at least half an hour.

FUEL GAUGE. Run engine until fuel in tank is exhausted. Then pour in three gallons and mark position of needle so you'll know your gallon reserve.

AMMETER. Run engine until needle drops down to normal charging rate. Then, with lights and all accessories off, mark its position at fast idle.

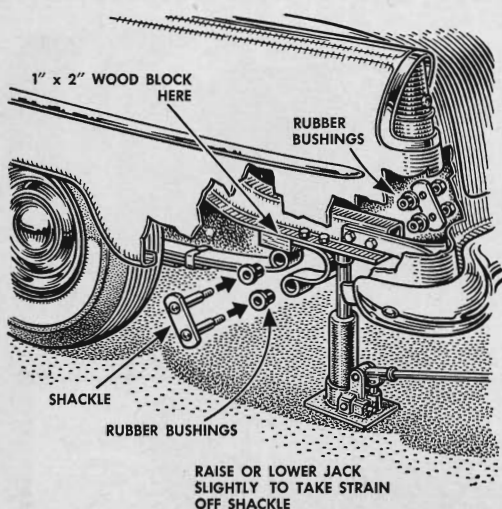
OIL-PRESSURE GAUGE. Mark needle's position while running engine at speed equal to about 30 m.p.h. Be sure that the engine is thoroughly warm.

You can keep tabs on your car's performance and note gradual deterioration by marking the critical readings on the dash instruments with small arrow heads cut from colored gummed tape. The arrows will also serve as an operating guide

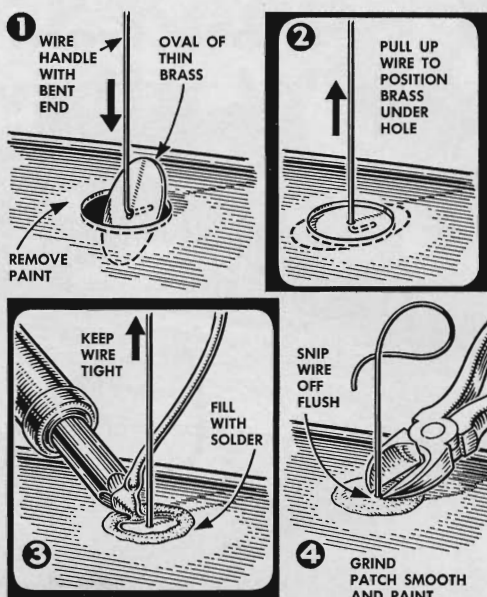
to other persons driving your car. Place an arrow opposite the speed limit for your state to keep you from unconsciously exceeding it, and stick one on the fuel gauge to indicate the actual amount of gas remaining as the needle nears "E."

Please turn the page for more hints

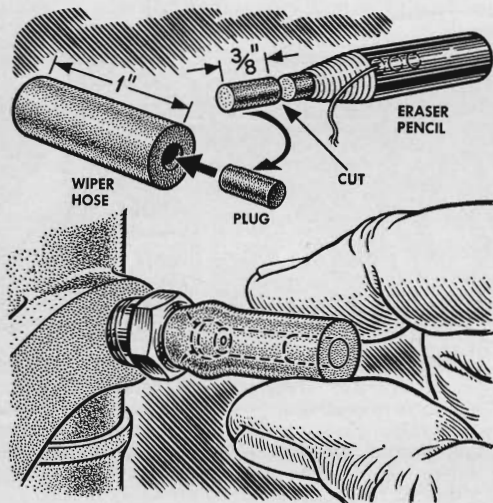
More Hints from the Model Garage



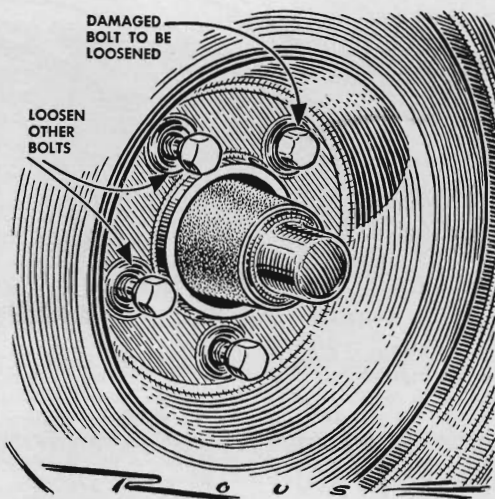
Worn spring bushings can be replaced without effort. Jack up the chassis until there is room for a block of wood between the spring and hanger eyes. Then lower the chassis. With tension off the spring, the shackle can be removed easily.



To fill a screw hole after removing an accessory, back it up with an oval of brass held in place with a wire. Flow solder over it to build up the surface and snip off the wire when the solder sets. Grind the patch flush and paint to match.



Protective caps, quickly made from windshield-wiper hose, will keep grease fittings clean and make them easy to find. Cut the hose into 1' pieces and close one end with plugs cut from an eraser stick. Clean the fittings *before* you cap them.

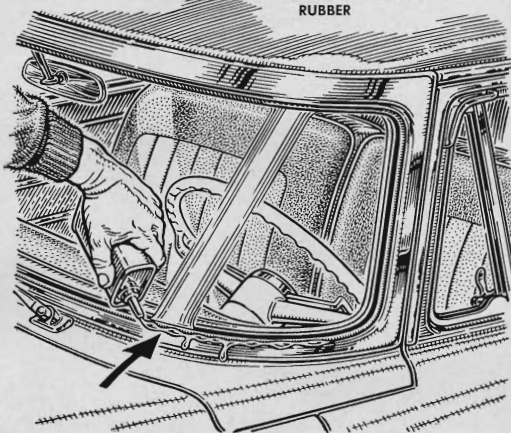


When a wrench won't grip the head of a damaged wheel lug, you can sometimes jar it loose. With the car jacked up, loosen the other lugs. Then lower the car and rock it back and forth to make the wheel shift slightly, causing the lug to turn.

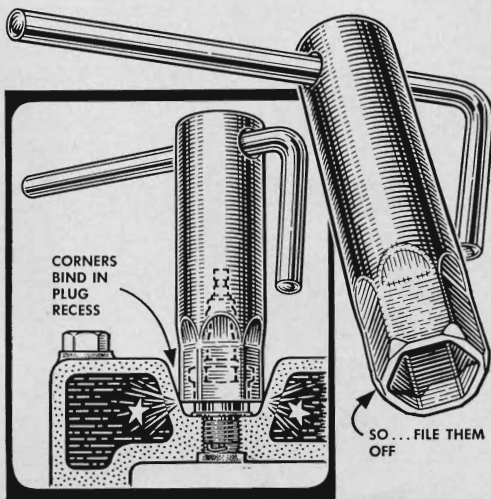


Hints from the Model Garage

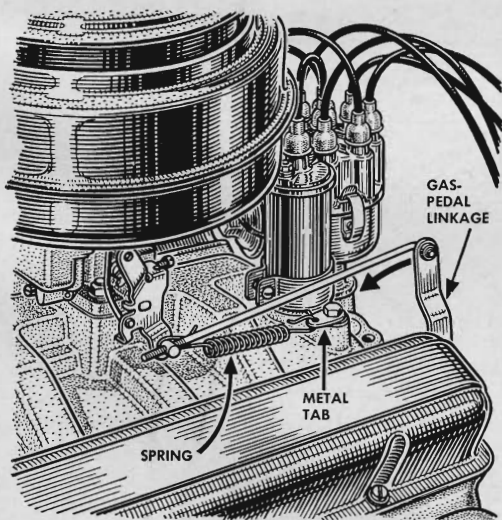
APPLY RUBBER
LUBRICANT
BETWEEN METAL AND
RUBBER



To stop an annoying squeak caused by vibration of the windshield in its opening, trickle silicone rubber lubricant between the metal molding and the rubber channel. If this doesn't silence it, force sealing compound between rubber and glass.



A spark-plug wrench will work easier if you file off the sharp outside corners. This small effort will prevent the six-sided wrench from binding or digging into the plug-recess sides as you exert pressure to loosen or tighten the plug.

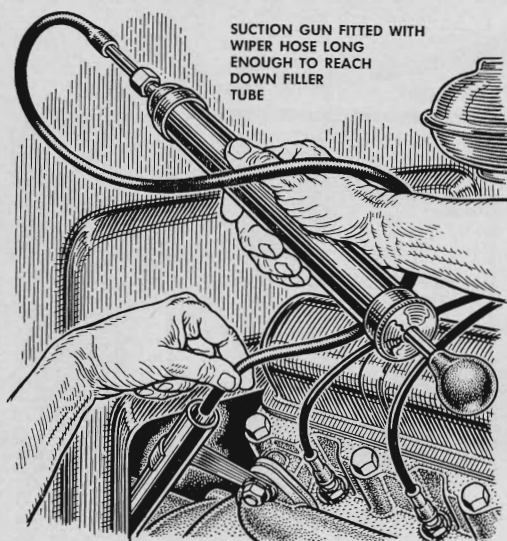


Erratic idling—fast one time, slow the next—can often be corrected by adding a 10-cent spring to the throttle linkage. Stretch the spring far enough to insure positive throttle return, and secure it to a metal tab held by a head bolt.

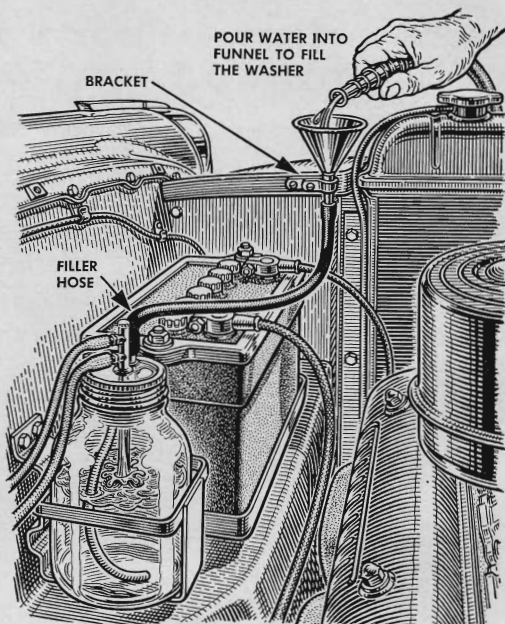


If a nut or bolt drops into an out-of-reach place, retrieve it with a magnetized screwdriver. Wrap the tool with insulated wire and briefly touch the ends to the battery. Then tie the wire to the handle and lower it to pick up the part.

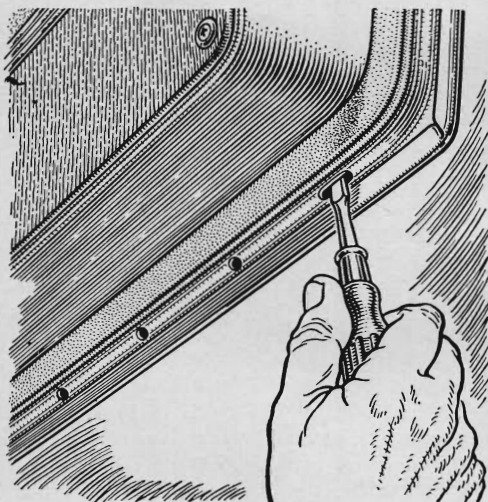
More Hints from the Model Garage



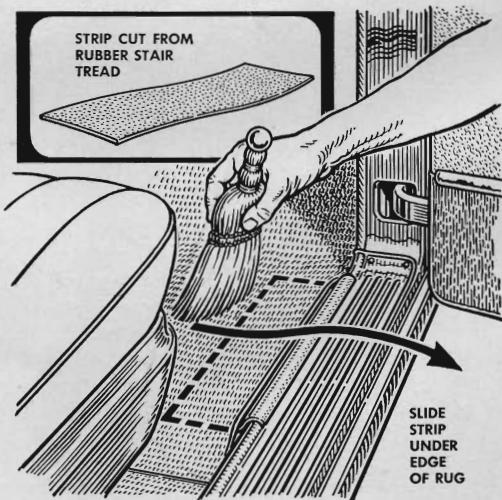
Too much fluid in an automatic transmission can be as unwise as too little. Use a suction gun fitted with a length of wiper hose to draw excess fluid up through the filler tube. Keep the gun clean and don't use it for any other purpose.



You can top off your car's windshield-washer jar every time you check the radiator, with this setup. Permanently install a small funnel on one of the radiator supports and run a length of hose from it to a hole drilled in the water-jar cap.



To prevent rusting out along door bottoms, probe the drain holes occasionally with a screwdriver. It won't hurt either, if you find them plugged, to drill additional holes. Use a $\frac{1}{4}$ " drill and space the new holes in the door between the old ones.



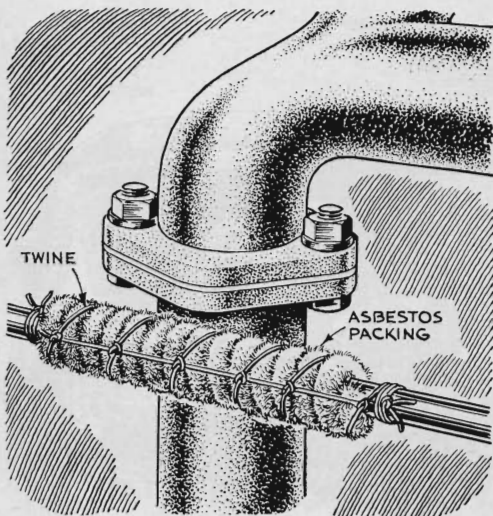
Bridge the gap between the floor mat and door molding to make sweeping out the car an easier job. Cut pieces of stair tread and slip them under the mat, leaving an inch or so protruding over the metal to deflect the sweepings up and out.



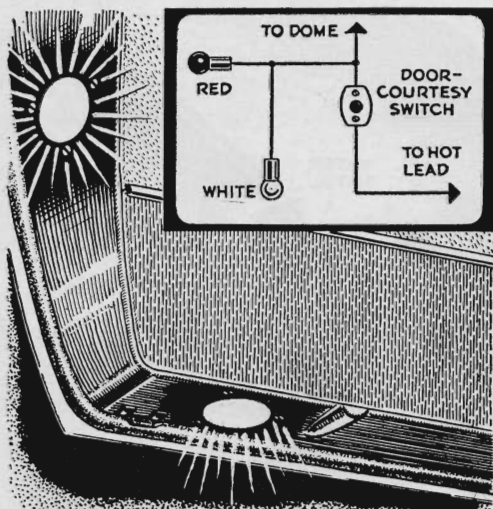
Hints from the Model Garage



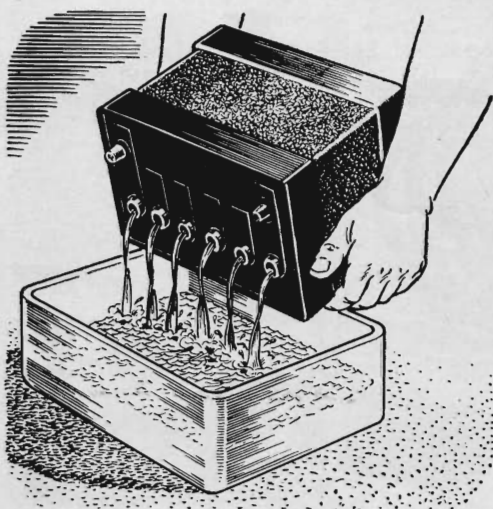
Those big, modern stop lights are brilliant enough to serve as backup lights. To make them go on, touch your brake lightly when backing, or connect them to a separate backup-light switch mounted on the lower end of the steering column.



To prevent vapor lock if the fuel line passes near a hot manifold, insulate the line with asbestos packing. Wrap the packing around the gas line, wet it with water and squeeze to compact it, then bind it tightly in place with twine.

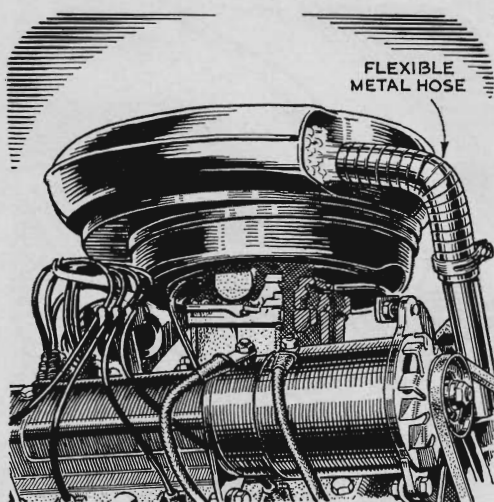


Small lights set in holes cut in door edges will warn approaching cars and illuminate the ground where you step down. Connect the lights to the courtesy-light switch and protect the wire with plastic tubing where it enters the door.

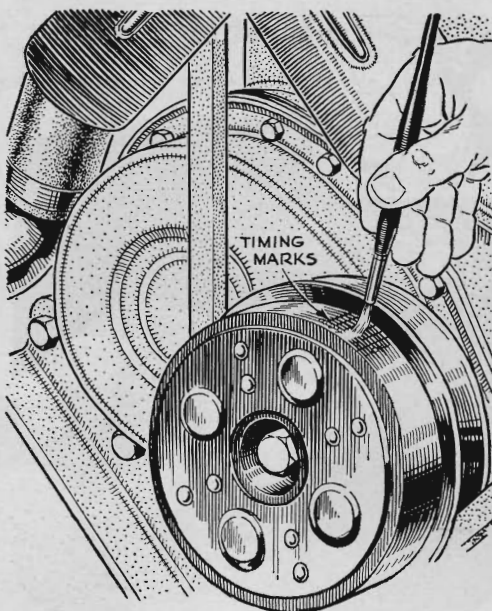


Extra years of battery life are reported by a motorist who flushes out plate sediment with water when a cell appears shorted. He pours the electrolyte into a baking dish, flushes all cells, puts back the electrolyte and charges the battery.

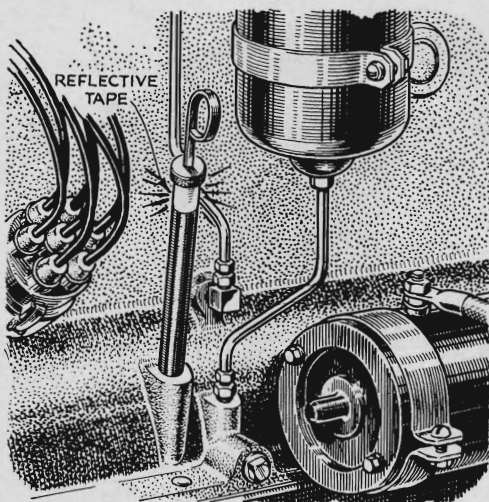
More Hints from the Model Garage



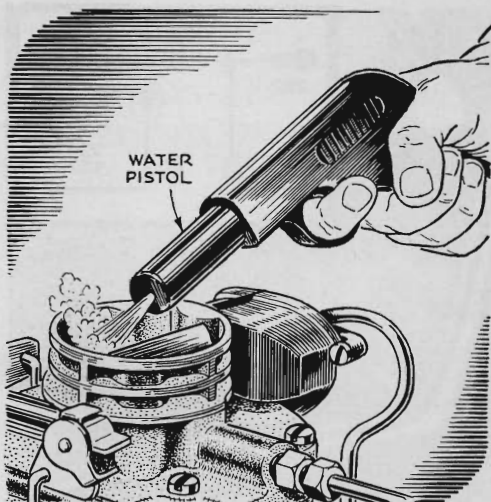
Got an oil pumper that puffs clouds of blue smoke up through the filler pipe? One mechanic eliminated the smoke by diverting it into the carburetor through a short length of flexible tubing. Now the oily vapor lubricates the valve guides.



Timing marks will stand out vividly under the beam of a timing light if they are wiped clean and painted with thin stripes of luminous paint. The paint, available at hardware and art-supply stores, glows when illuminated.

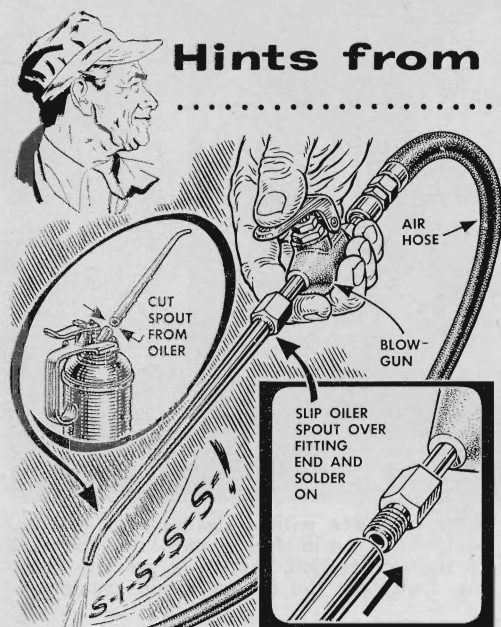


Wrap the top of the crankcase dipstick tube with white reflective tape to make it visible in the shadow of the hood at night. The tape will reflect any feeble stray light, making it easy to replace the dipstick after checking the oil level.

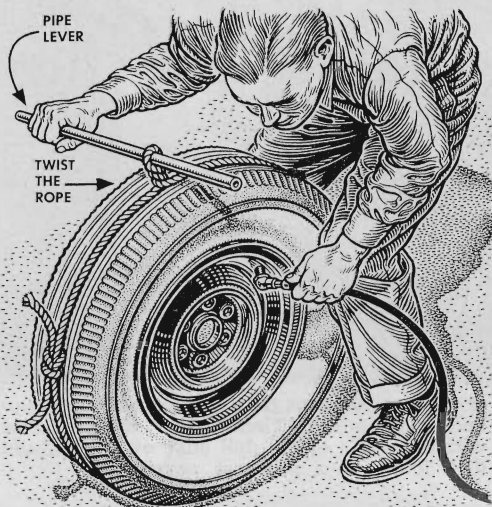


To start a balky engine or save cranking to prime the fuel system after running out of gas, fill a metal water pistol with gas and squirt it into the carb's throat. This is better than *pouring* in gas; the gun breaks it up into a fine spray.

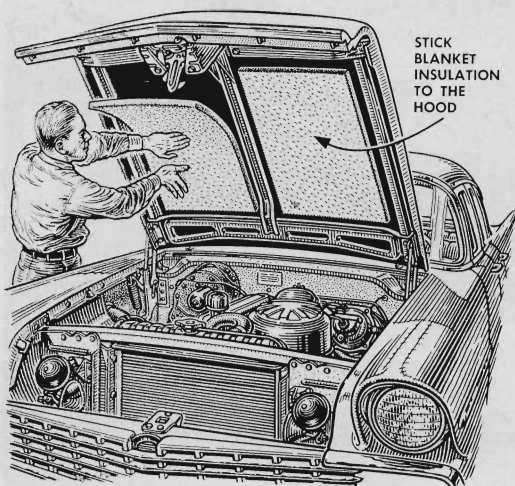
Hints from the Model Garage



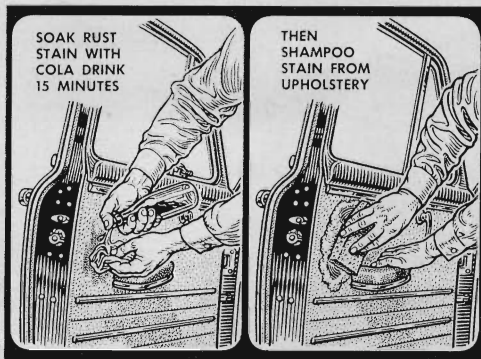
For blowing out dust from inaccessible places, solder the spout from an old oil can to a brass coupling that fits the blow-gun nozzle. You can then use the gun for normal cleaning operations and quickly attach the spout for a long reach.



Repair your own tubeless tires? You can seat the beads against the wheel rim so they'll hold air by applying a rope tourniquet around the tire. When partial inflation expands the tire, remove the rope and inflate to recommended pressure.



Make your own hood liner from blanket-type glass-fiber insulation sold by the yard at lumber yards. Cut the insulation to fit the underside of the hood, apply body undercoating to the metal, and immediately press the material in place.



USE ICE TO HARDEN CHEWING GUM. THEN CHIP IT OFF WITH A DULL KNIFE POINT



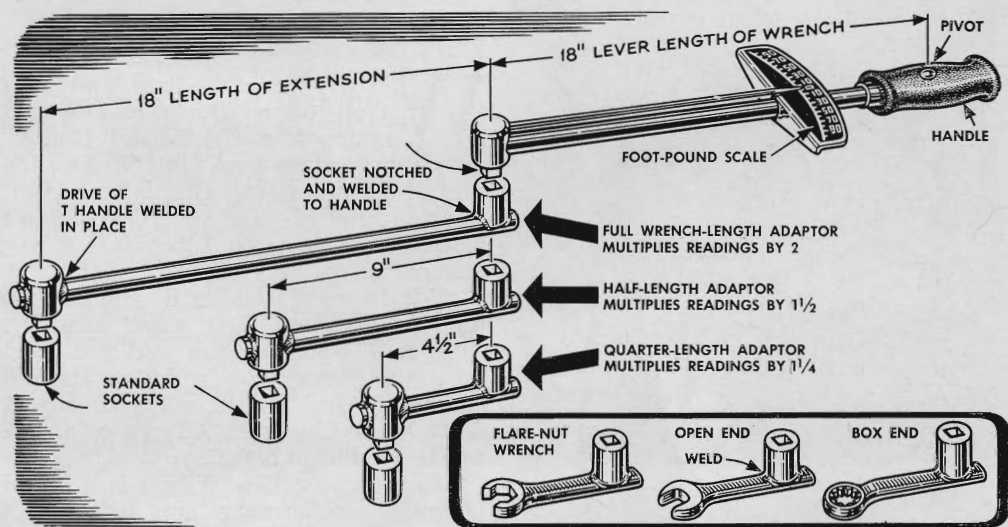
To remove rust stains or chewing gum on upholstery one motorist uses cola drink and ice cubes. He soaks rust spots with cola, then shampoos the area after allowing it to act. Gum is hardened by chilling, then chipped off with a knife.



Hubcaps will stay new-looking if you remove them occasionally and wash and buff them. Use a lamb's-wool polisher in an electric drill to brighten the chrome, and finish off with a protective coat of paste wax buffed to a high polish.



Check the oil yourself? Keep your oil-pouring spout clean and ready to use by storing it in a plastic bag. Besides keeping dust and insects out of the spout, the bag will collect oil drippings, preventing a mess in the garage.



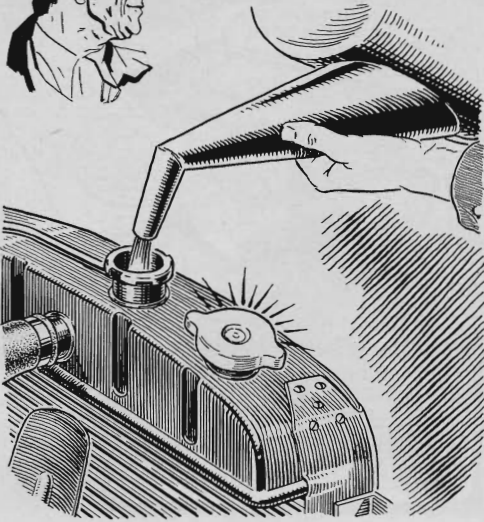
One torque wrench can be made to do the work of several. Just use wrench adaptors that can increase its capacity up to double the calibrations on the scale. An adaptor or extension arm equal to the lever length of the wrench will multiply the torque by

two; thus a 100-foot-pound wrench can be used to tighten bolts up to 200 foot-pounds. Shorter adaptors increase the range proportionately as shown. Adaptors with open or box ends (lower right) also extend the usefulness of the wrench.

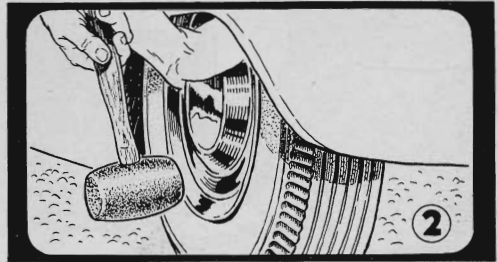
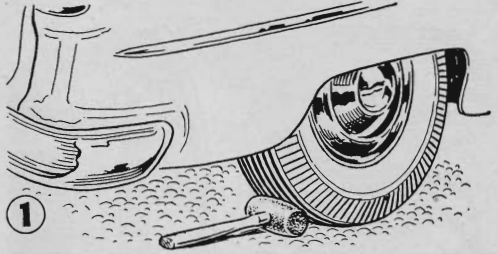


Hints from the Model Garage

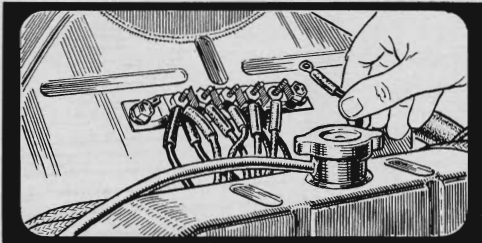
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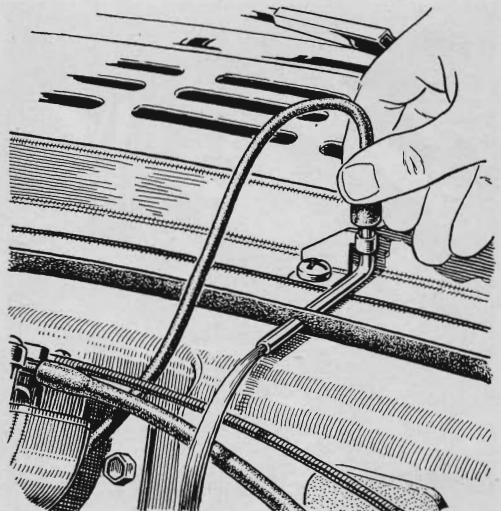
Your radiator cap is less likely to be left unnoticed after the coolant has been checked if you paint it bright yellow. Paint the underside, too (but not the pressure seal), to make it conspicuous even if it is set aside upside down.



A rubber mallet is useful in two ways when you change a wheel: Place it under one of the other wheels as a safety chock to keep the car from rolling; when the job is done, pull it out by the handle to use it for driving on the hubcap.



If a headlight burns out on both filaments, you can temporarily connect a parking light to the headlight circuit to show oncoming drivers the width of your car. Switch wires at the junction block, usually located behind the grille.



Windshield washer won't squirt? First, be sure there's water in the reservoir. Then disconnect the tube at the washer nozzle and slip it over the discharge end. Operate the washer a few times to reverse-flush the nozzle and clear it.

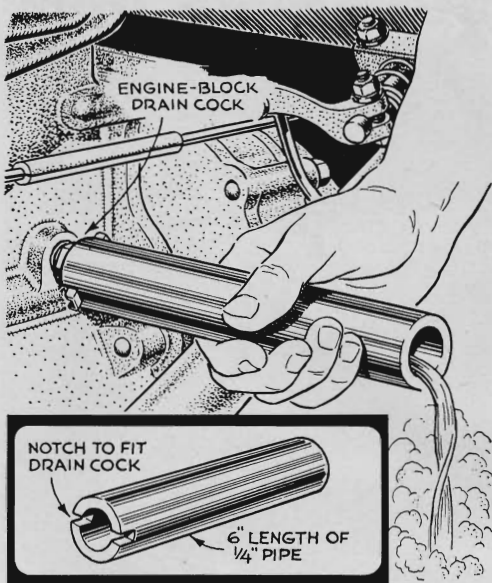
Please turn the page for more hints

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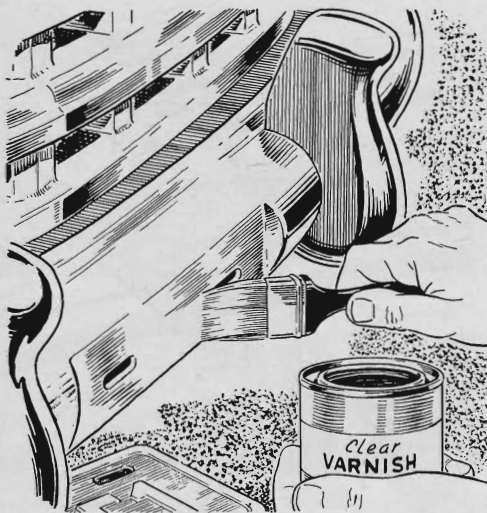
More Hints from the Model Garage



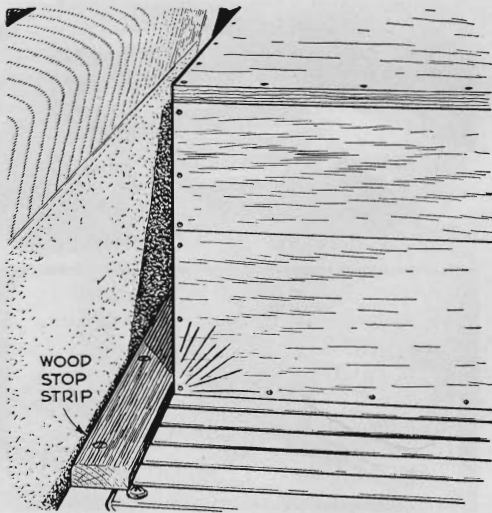
Keep tail lights bright by occasionally wiping dust from the bulbs and the *inside* of the lens. Your turn- and stop-signals will be unmistakably clear to drivers behind you, and some foggy night their brilliance may prevent a collision.



A notched piece of pipe will keep your hands from being scalded when draining coolant from a hot engine. Slip the notched end over the drain cock's T handle and twist. As the drain opens, hot water will flow through the pipe.



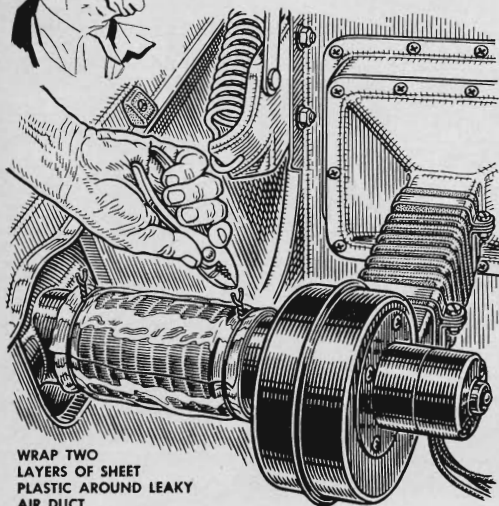
Rust often starts unnoticed where the bumper is covered by the license plate, then spreads rapidly outward. You can prevent this by protecting the chrome in that area with a coat of clear varnish before you bolt on the plates.



A wood stop or strip fastened to the deck of a station wagon, behind the front seat, will keep boxes and suitcases from slamming forward when the brakes are applied. Fasten the strip down securely with sheet-metal screws.

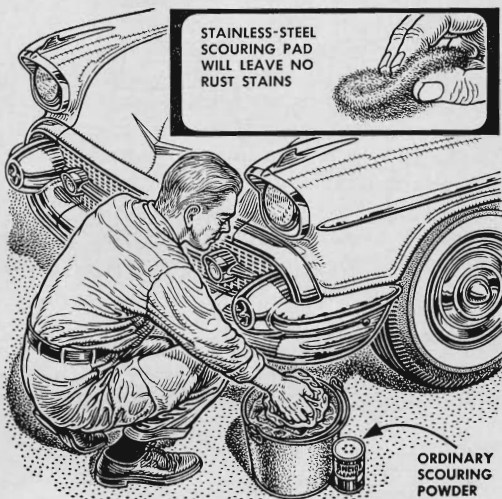


Hints from the Model Garage



WRAP TWO LAYERS OF SHEET PLASTIC AROUND LEAKY AIR DUCT

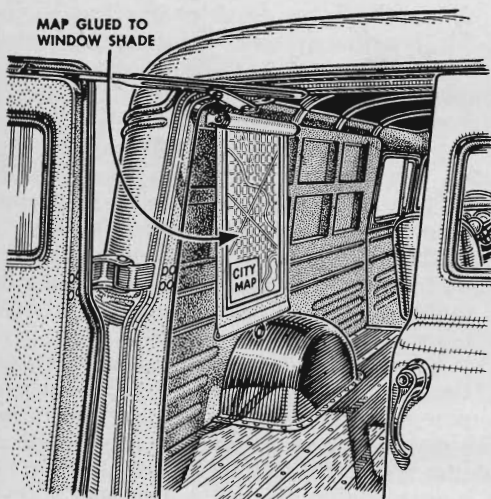
Seal out engine fumes—if they're finding their way into your car through pin-holes in the heater duct—with a simple but effective boot of plastic material. Wrap the material twice around the duct and close the ends with wire, twisted tight.



STAINLESS-STEEL SCOURING PAD WILL LEAVE NO RUST STAINS

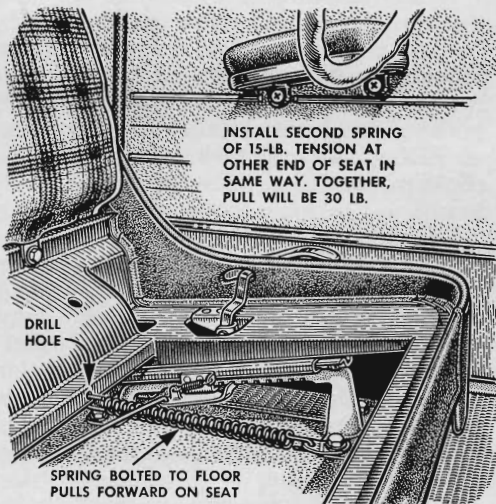
ORDINARY SCOURING POWDER

To clean metal trim and wheel disks made of stainless steel, kitchen scouring powder is best. If a scouring pad must be used to remove dirt, be sure it's a stainless-steel pad, not ordinary steel wool which shreds and causes rust stains.



MAP GLUED TO WINDOW SHADE

A large map that is referred to frequently can be made instantly available by pasting it to a window shade. Use flexible cement or photo-mounting tissue. Hang the roller on shade brackets in a place where it can easily be pulled down.

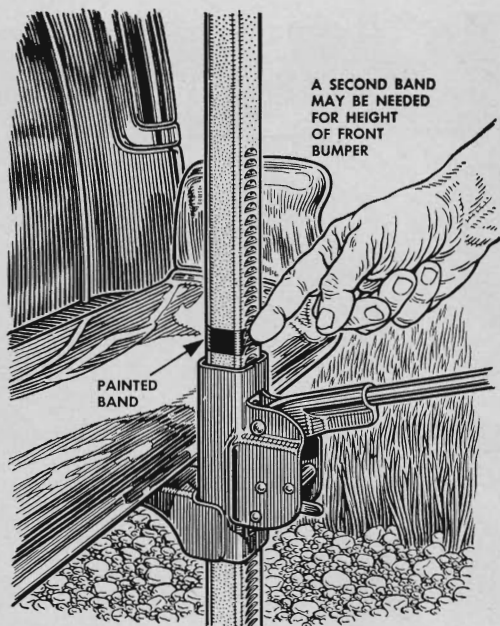


INSTALL SECOND SPRING OF 15-LB. TENSION AT OTHER END OF SEAT IN SAME WAY. TOGETHER, PULL WILL BE 30 LB.

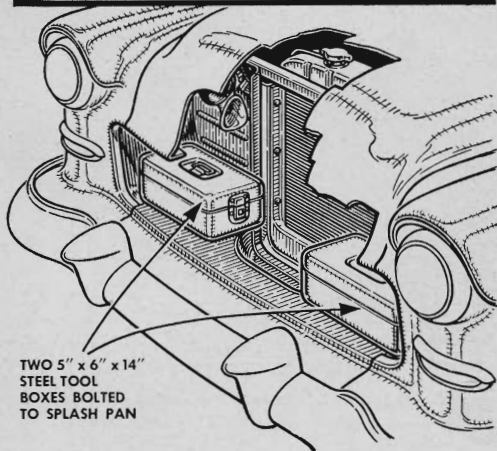
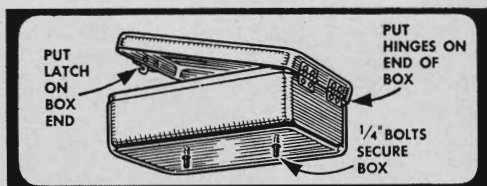
DRILL HOLE

SPRING BOLTED TO FLOOR PULLS FORWARD ON SEAT

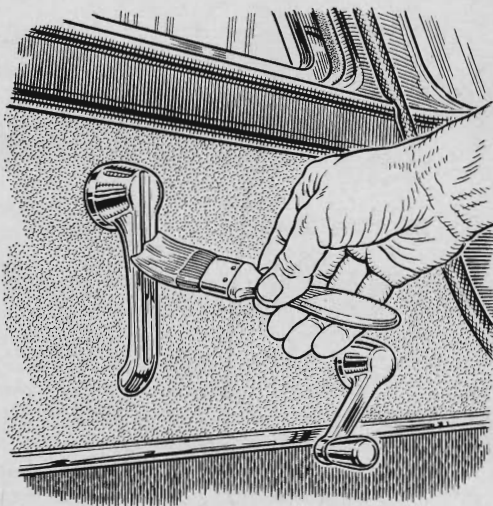
Adjusting the front seat is easier for a short person if a pair of screen-door springs are attached to pull it forward when the lock is released. A tall driver can readily overcome the spring tension and push the seat back again.



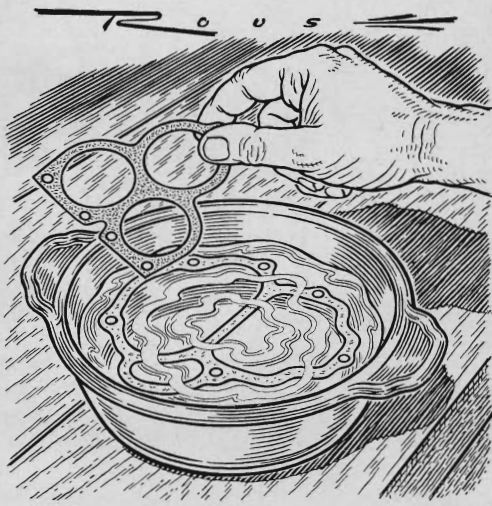
A mark painted on your bumper jack will tell you quickly just how high to raise the car to clear both the flat and the inflated spare. On some cars, two height marks may be needed, one for jacking the front end and one for the rear.



Extra storage space for tools, oil, flashlight and spare parts can be obtained by bolting a steel tool box behind the grille on each side of the radiator. Be sure to locate the boxes so they can be reached easily and do not obstruct the radiator.



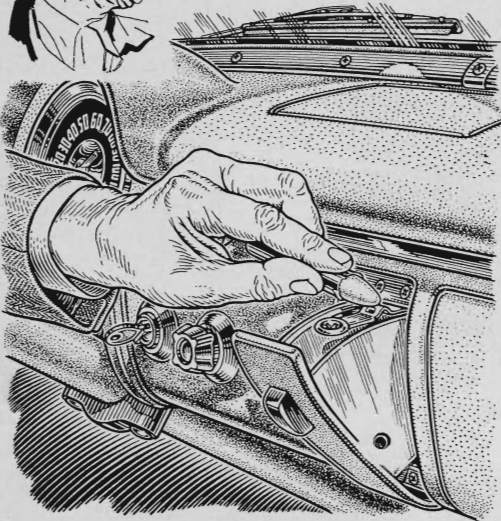
If static electricity gives you a jolt each time you touch door or window handles, apply a coat of thinned white shellac over the metal. The shellac will act as insulation and, incidentally, will protect the metal handles and keep them bright.



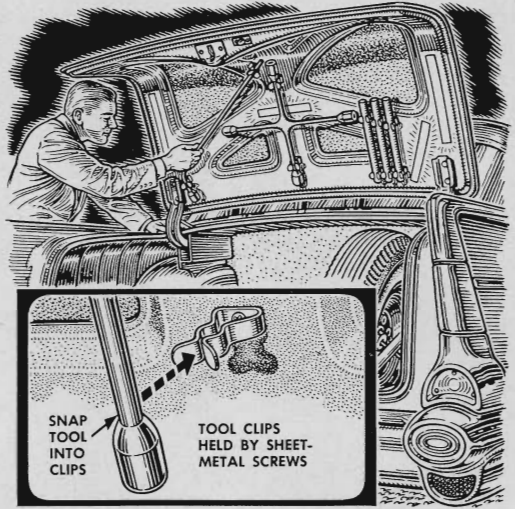
When re-using gaskets after minor carburetor repairs, soak them in water or kerosene while you work on the assembly. The fluid causes the gaskets to expand and their fibers to fluff up to full thickness. Treat new gaskets the same way.



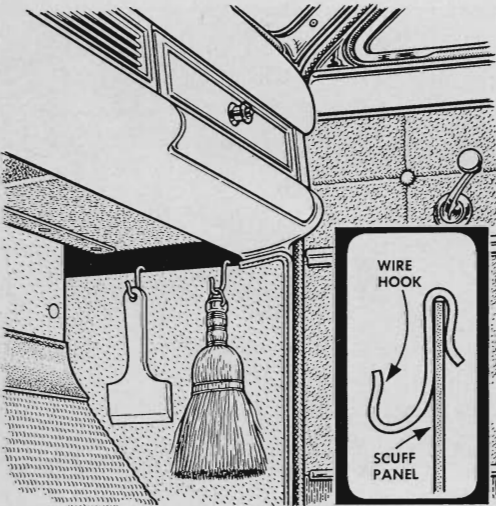
Hints from the Model Garage



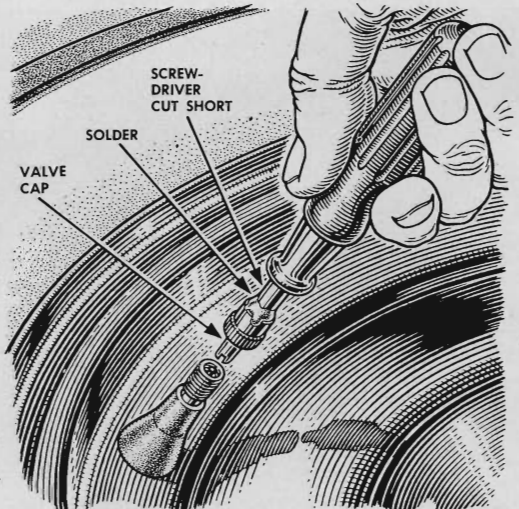
A smooth-working ash receptacle can be yours with little trouble. Just rub a stainless grease stick on the spring latch. Pull the receptacle out beyond its stop, empty it, wipe the latch clean of cigarette ashes, then lubricate its sliding surfaces lightly.



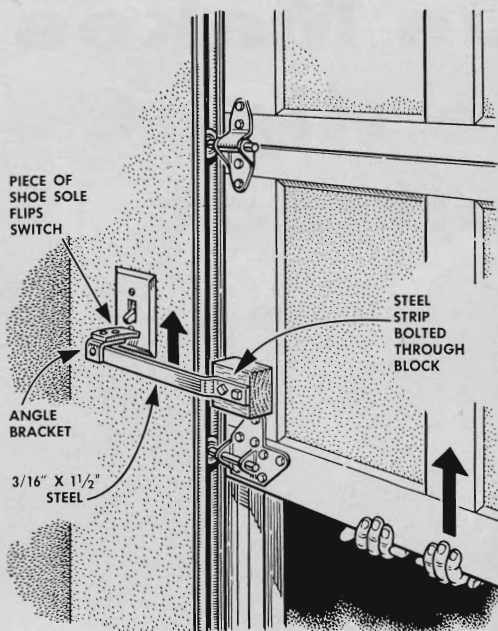
For more trunk space—and fewer rattles—install spring clips on the underside of the trunk lid to hold the tools you carry for roadside repairs. Strips of reflective tape stuck beside the tools will warn oncoming motorists when the lid is up.



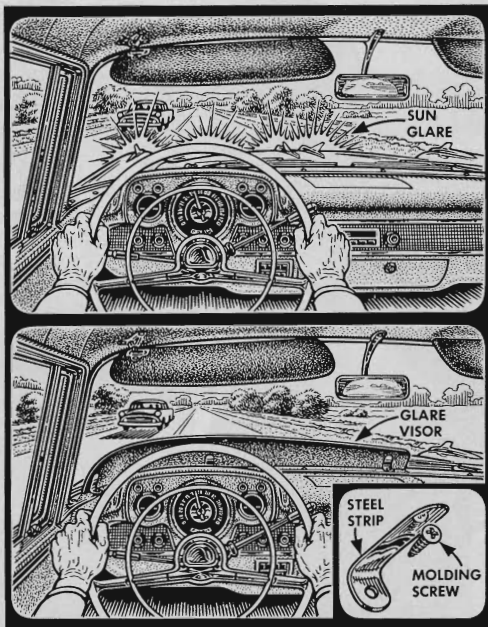
Double-ended hooks bent from coat-hanger wire can relieve an overcrowded glove compartment. Slip them over the top edge of the right scuff panel for hang-up storage of a whisk broom, windshield scraper, or a flashlight with an end ring.



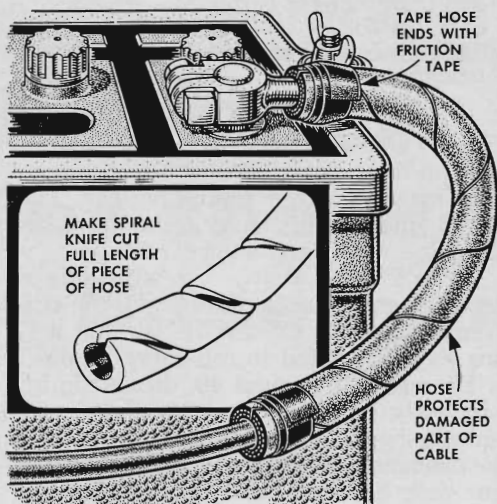
A handy tool for tire-valve cores can be made by soldering a slotted valve cap to the shank of an old screwdriver. The tool won't be blown from your hands as happens occasionally when a cap is used to remove the core from an inflated tire.



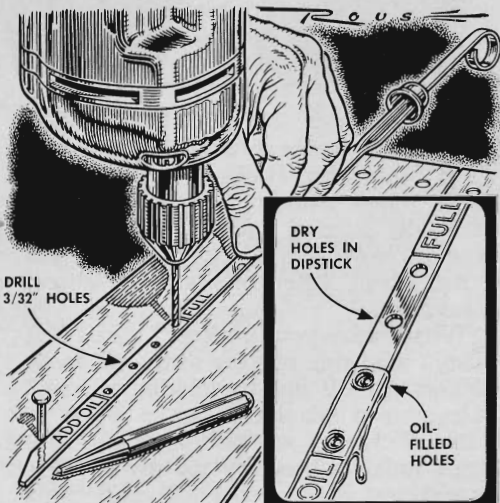
Automatic garage-light switch is actuated by a leather "thumb" mounted on an extension arm on the garage door. The leather tab must be stiff enough to flip the toggle as the door is raised or lowered, yet flexible enough to brush past it.



You can shield your eyes from hood glare, when driving toward the sun, by placing a strip of cardboard across the bottom of the windshield. Cut the strip to block out the hood—not the road—and screw metal clips to the molding to hold it.

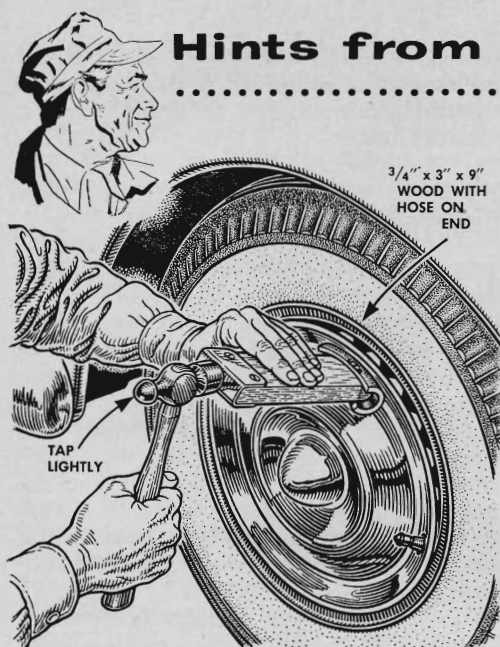


Reinforce heavy insulation, or cover it if it's frayed, by wrapping with garden hose. Use a sharp knife to cut a continuous spiral from a piece of the required length, then wrap it around the wire. Twist it tight and tape the ends.

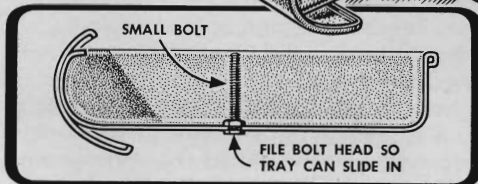
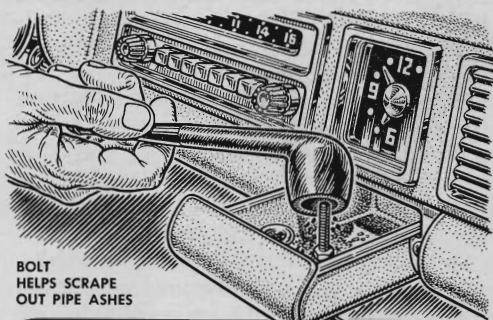


Reading the crankcase dipstick will be easier, especially when the oil is fresh and clear, if you drill four small holes between the FULL and ADD OIL marks. The holes covered by oil will appear as tiny lenses; the others will remain open.

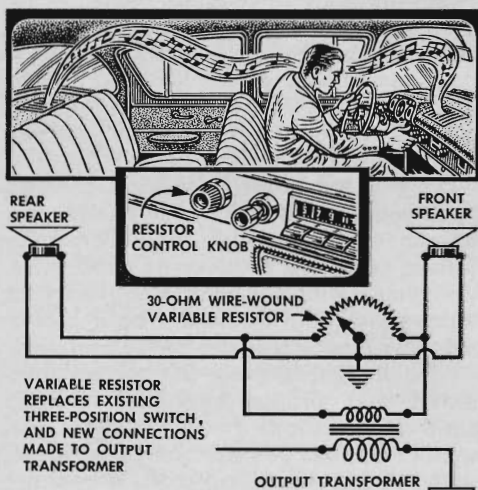
Hints from the Model Garage



Wheel covers can be driven securely in place without denting them with this quickly made tool. Round off one end of a piece of wood and cushion it with a short length of heater hose. Fasten a steel plate around the hammering end.



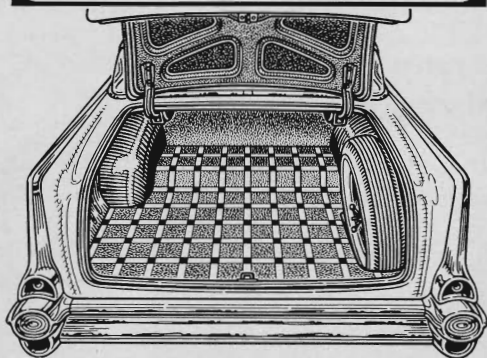
A pipe reamer, made by locking a 1" or 1½" machine screw in a hole drilled in the bottom of the ash receptacle, will clean out the bowl neatly. Countersink the screw head or file it nearly flush if it catches when the tray is pushed in.



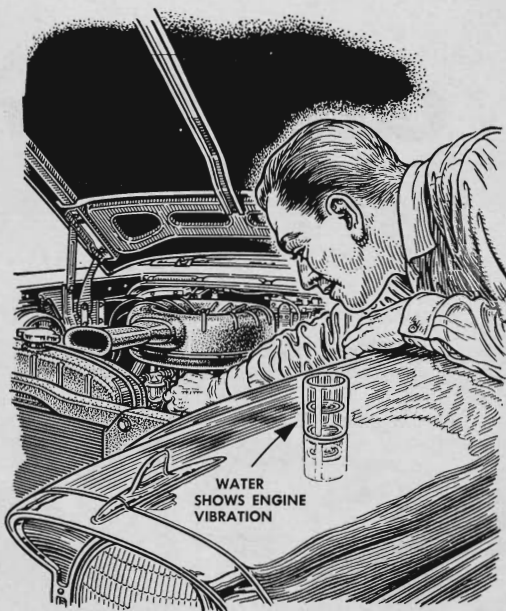
Volume of front and rear speakers can be delicately adjusted with a variable resistor. Centered, the control puts both speakers at equal output. Turned to either side, it gradually reduces the volume of one and steps up the other.



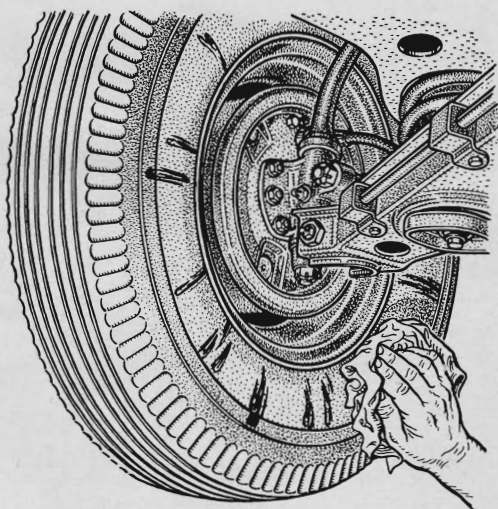
A dash vanity like this will make a hit with lady passengers. Solder hinges to the metal back of a small mirror and mount it inside the glove-compartment door. The compartment light will illuminate the area for face fixes at night.



For a neat trunk that's easy to keep clean, cut a paper pattern to fit the trunk floor and trace its outline on a piece of linoleum. Installed in the trunk, the linoleum presents a smooth surface that won't scratch luggage.



A glass of water placed on the front fender will guide you when adjusting the carburetor. Turn the idling screws in or out until the water is least agitated. At this point, the jets will be set for the smoothest idle possible.



Wipe front tires clean after you have your car lubricated. Grease forced out of front-end fittings invariably falls on the inner wall of the tires and, if allowed to remain, it will soften the rubber and eventually weaken the tire.

Do You Have an Auto Hint? Send It in and Win a Prize

HAVE you discovered or developed a moneysaving short cut for making your own auto repairs? Have you found an easier way to do a difficult job? Got a tip that will make driving safer or easier? Or do you know someone who has an original tip, one not previously published?

POPULAR SCIENCE will pay a cash prize of \$15 for every auto-repair hint accepted for publication each month in Hints from the Model Garage.

Describe your idea as completely as you can in words. Add a pencil drawing, or shoot a photo, if you feel that this will make it more easily understood. Address your entry to Model Garage Editor, POPULAR SCIENCE, 353 Fourth Ave., New York 10, N. Y.



Hints from the Model Garage



A coat of clear acrylic sprayed on license plates will preserve the painted surfaces and keep them looking new—even over several years of use required in some states. The acrylic is also useful for protecting chrome and damp-proofing wires.



Chains won't tangle or rattle in the trunk if you roll them in a strip of burlap. Cut the burlap slightly wider and longer than the chain, and lay the chain out flat before rolling. Heavy rubber bands will keep the rolls intact.

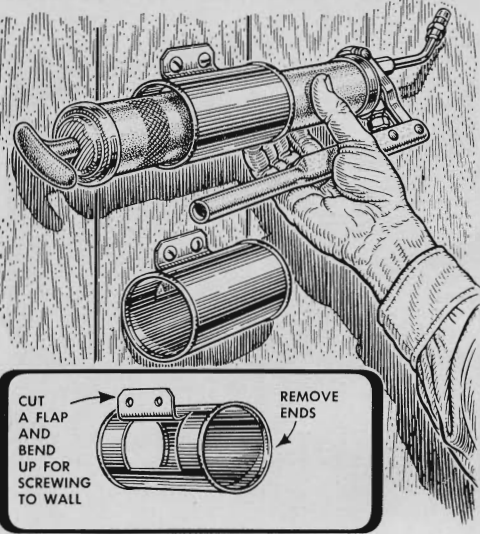


A good way to carry sand for emergency use on ice and snow is in a one-gallon can. Several cans are easy to stow compactly, and sand can't sift through as it sometimes does in bags. Pouring the sand where you need it is easier, too.

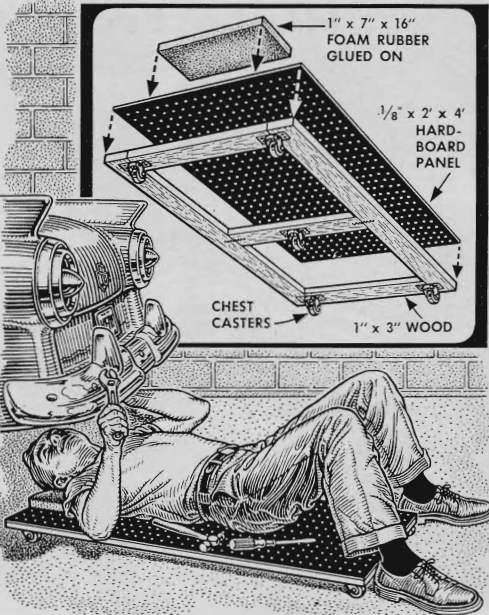


For a handy quick-cleaner around a car, try baking soda. A little sprinkled on a damp cloth will quickly remove gasoline stains around the filler cap, take off road-tar spots and spattered insects, and clean and neutralize battery acids.

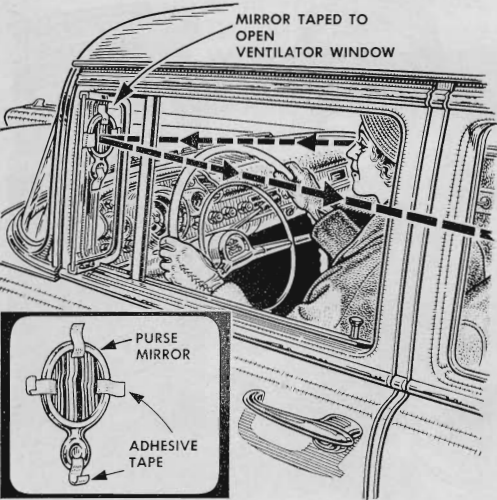
More Hints from the Model Garage



Storing a grease gun, calking gun and many other car and home tools is easy in racks made from discarded tin cans. Remove both ends and cut out a flap in the center of the can. Bend the flap outward and screw it to the wall as shown.



You can build this creeper for about \$4.50, and the investment in comfort will soon be repaid when working under your car. For the frame, join one-by-threes with corrugated fasteners. Cover with perforated hardboard and add casters.



If rearward vision is blocked when hauling furniture or bulky packages, a small hand mirror taped to the outer edge of the vent window on the driver's side will enable you to see. Swing the window to bring the mirror into seeing position.



For scraping snow or frost from the windshield, stow a plastic tile in the glove compartment. The tile has four sharp edges that will quickly clear the glass without scratching it, and, being flexible, the tile will bend to fit the curves.